Answer each of the following questions. You must show your work in order to receive partial credit.

Find the trigonometric function value for the angle shown.

1) \( \sec \theta \)

\[
\sec \theta = \frac{\sqrt{85}}{7}
\]

Find the trigonometric function value of angle \( \theta \).

2) \( \sin \theta = -\frac{3}{11} \) and \( \theta \) in quadrant III

Find \( \sec \theta \).

\[
\sec \theta = \frac{11}{-4\sqrt{11}} \cdot \frac{\sqrt{11}}{\sqrt{11}} = \frac{-11\sqrt{11}}{-22}
\]

Find the reference angle for the given angle.

3) 420°

Solve.

4) A wheel with a 24-inch radius is marked at two points on the rim. The distance between the marks along the wheel is found to be 10 inches. What is the angle (to the nearest tenth of a degree) between the radii to the two marks?

\[
\frac{5}{12} \times \frac{180}{\pi} \approx 23.9°
\]
5) In a circle with a 15-ft radius, how long is an arc associated with an angle of 2.1 radians?

\[ A = r \theta \]
\[ A = 15 \times (2.1) = 31.5 \text{ ft} \]

6) A cylinder on John Lennon Guttenberg's printing press has a 38.6 cm diameter. The linear speed of a point on the cylinder's surface is 119 meters per minute. What is the angular speed of the cylinder in revolutions per hour? Round to the nearest tenth, if necessary.

\[ v = r \omega \]
\[ 100 \times 119 = 19.3 \omega \]
\[ 11900 = 19.3 \omega \]
\[ \frac{11900}{19.3} = \omega \]

\[ \frac{11900 \text{ radians}}{19.3 \text{ min}} \times \frac{1 \text{ rev}}{2 \pi \text{ radians}} \times \frac{60 \text{ min}}{1 \text{ hr}} \]

5887.9 rev/hr